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# GAIN Report

Global Agricultural Information Network

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## **Thailand**

### **AGRICULTURAL BIOTECHNOLOGY ANNUAL**

#### **Agricultural Biotechnology Annual 2009**

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**Report Highlights:**

TH9111. There has been little policy and regulatory progress in the area of agricultural biotechnology since the Cabinet agreed to revoke the ban on biotech field trials in December 2007.

## **Section I. Executive Summary:**

There has been a little progress to commercialize agricultural biotechnology in Thailand. Although the Thai Cabinet revoked the biotech field trial ban in Thailand on December 25, 2007, government and private sector stakeholders voiced frustration with Cabinet decision which imposed restrictive requirements in conducting the field trial. In order to meet one of the Cabinet requirements, Technical Biosafety Committee under BIOTEC completed specific guidelines, called “Models for Field Trial of Genetically Modified Crops” for papaya and tomato. The guidelines should be submitted to Department of Agriculture, Ministry of Agriculture, in August 2009 for a final review and then will be submitted to the Cabinet for approval.

Biosafety legislation is moving slowly. Draft legislation was forwarded to the Office of the Council of State for legal review in April 2008. To date, the Office of the Council of State maintained a dialogue with the Ministry of Natural Resource and Environment (MONRE) to make adjustments to the draft law. It is anticipated that the review process may not be finalized until early 2010. After legal review, final legislation will be submitted to the House of Representatives for review and approval. This process normally can be terminated anytime if the Prime Minister decided to dissolve the House of Representatives, a political tool used in the past to circumvent political difficulties.

The Biosafety law is viewed as the key piece of legislation in advancing biotechnology in Thailand since the inclusion of guidelines for field trials in the law should largely silence much of the existing criticism and opposition to adopt agricultural biotechnology in Thailand.

## **Section II. Biotechnology Trade and Production:**

Although there has been some research progress over the past 20 years and field trials for a few imported transgenic plants were completed, deregulation has been stalled and there still is no commercial production of transgenic crops in Thailand. This lack of forward movement reflects political concerns arising from strong opposition from non-government organizations (NGOs), especially BioThai and Organization of the Poor, and fears that Thailand might lose food export markets- especially in the EU if agricultural biotechnology is commercialized. These political concerns have resulted in a lack of long-term policies and strategies on agricultural biotechnology.

There has been some research progress made in a few locally grown plants and vegetables such as tomato, chili, rice, and papaya. Research on ring-spot virus resistant papaya has developed to the point that could be the first transgenic crop for commercial cultivation in Thailand.

In addition to research on domestic plants, the first field test of imported transgenic seed was conducted in Thailand in 1994. The first crop plant permitted to be field-tested was the Flavr Savr tomato, a delayed ripening tomato. During 1994-2000, there were many other imported transgenic plants that obtained permits for confined field-testing in Thailand, including Bt cotton, Bt corn,

Round-up Ready cotton, Round-up Ready corn, Antisense RNA tomato, CP-gene of papaya PRSV, etc. Among these, Monsanto's Bt cotton underwent the confined large-scale field trials in the country, from March 1996 until the year 1999. It was expected that this Bt cotton would be the first transgenic crop for commercial planting in Thailand. While the field trials convinced onlookers of the environmental safety of the crop and of significantly reduced cost of production, strong opposition from several NGOs stymied the RTG's decision. Market introduction of this Bt cottonseed has remained suspended thus far.

Thailand does not allow importation or production of any transgenic plants for commercial purposes except for: (1) processed food; and (2) imports or sales of soybeans and corn for feed use, human consumption, and industrial use.

Processed foods containing biotech products, must comply with the 2003 Ministry of Public Health's labeling law, which maintains a five percent tolerance (see also [TH6077](#)) for biotech materials/products. Processed products containing more than five percent biotech materials require additional labeling.

### **Section III. New Technologies:**

Thailand has not initiated any development on the genetic engineering of animals.

### **Section IV. Biotechnology Policy:**

Current Biotechnology Policy:

Although the Thai Cabinet revoked the biotech field trial ban in Thailand on December 25, 2007, future field trials must be conducted under new restrictive controls and surveillance, including confining trials to government properties only and conducting public hearings prior to initiating new field trials.

Government and private sector stakeholders voiced frustration with this Cabinet decision. The requirement to hold public hearings for field trial approval is considered unclear and provides an avenue for anti-biotech NGOs to become a part of the Government's decision-making process. In addition, the requirement that the field trials must be submitted for Cabinet approval on a case-by-case basis makes approvals subject to political decision-makers, many of whom are opposed to advancing biotechnology in Thailand.

According to BIOTEC, Technical Biosafety Committee under BIOTEC completed specific guidelines, called "Models for Field Trial of Genetically Modified Crops" for papaya and tomato. These guidelines were developed to meet the Cabinet's requirement. The guidelines should be submitted to Department of Agriculture, Ministry of Agriculture, in August 2009 for a final review and then will be submitted to the Cabinet for approval.

Responsible Government Agencies and Institutes:

There are many government agencies and institutes/universities involved in biotechnology research

and development and regulating the use of biotechnology at different levels. The role and responsibilities of these agencies or institutes are presented in the table attached.

Existing Biosafety Guidelines, including Biosafety Guidelines in Genetic Engineering and Biotechnology for Laboratory Work, Field Work, and Planned Release, are voluntary. Prior to the 2001 ban, several transgenic crops underwent biosafety testing and assessment in accordance with these Biosafety Guidelines, including virus-resistant papaya.

Thailand became a party in the Cartagena Protocol on Biosafety on February 8, 2006. Thailand follows the principles and rules of the Cartagena Protocol on Biosafety in drafting the National Biosafety Policy. The draft was approved by the Compliance Committee under the Cartagena Protocol on Biosafety on November 7, 2007. The policy covers eight concepts:

**Public Awareness, education and participation:** Requiring the involvement of affected parties in policy-level decision-making on the sustainability, advantages and risks of the technology in question.

**Sustainability:** Sustainable bioresource management must be taken into account the sustainability of the ecology, preservation of species and genetic pool.

**Risk Assessment and Management:** Risk acceptability will be assessed and managed on a case-by-case basis according to the Guidelines on Biosafety which will be based on scientific grounds first and foremost.

**Risk Characterization:** Characterizing risks for the management and control of biotech materials will depends on the outcome of risk assessment.

**Risk Communication:** Risk communication will be based on basic scientific concepts simplified for the public in order to lessen the concern of affected parties, increase public trust in research results, as well as curb possible panic from sensitive or contradictory information.

**Precautionary Principle:** Avoid unnecessary damage from the lack of reliable scientific data on possible effects of biotech materials on the conservation and utilization of biodiversity, environment, and health care.

**Freedom of Choice:** In utilizing biotech materials for everyone, including consumers, entrepreneurs, academics, farmers, as well as the general public with interested concerns. The state must encourage transparency, accuracy and up-to-date public data for an informed freedom of choice.

**Capacity Building:** Capacity-building on the national level for the consistent development of biosafety and modern biotechnology on the same ground, to increase national strengths in understanding, utilization and management capacity for the public, business and general sector via studies and development.

Under the National Biosafety Framework that Thailand has to comply with the Cartagena Protocol

on Biosafety, Thailand has developed drafting the National Biosafety Act as the national biosafety legal and regulatory framework since 2003. After several public hearings, the Ministry of Natural Resources and Environment (MONRE) received Cabinet approval of the draft National Biosafety Act in principle on January 22, 2008. The Biosafety law was then forwarded to the Office of the Council of State for legal review in April 2008. To date, the Office of the Council of State maintained a dialogue with the Ministry of Natural Resource and Environment (MONRE) to make adjustments to the draft law. It is anticipated that the review process may not be finalized until early 2010. After legal review, final legislation will be submitted to the House of Representatives for review and approval. This process normally can be terminated anytime if the Prime Minister decided to dissolve the House of Representatives, a political tool used in the past to circumvent political difficulties.

According to MONRE, the Biosafety law is viewed as the key piece of legislation in advancing biotechnology in Thailand. Although the ban on field trials was recently overturned, several stringent guidelines were created, such as linking approval of field trials to a public comment periods, and have made it difficult for government officials to advance their research. Furthermore, the reversal of the field trial ban came under heavy scrutiny from biotech opponents for allowing field trials to go forward without a clear Biosafety law in place. However, MONRE officials stated that the Biosafety law under review contains guidelines for field trials which should largely silence much of the existing criticism.

In general, the draft Act contains 9 Chapters, including appointment and responsibility of National Biosafety Committee, appointment and responsibility of Biodiversity Office, the control of living modified organisms (LMOs), public participation and information access, biosafety fund organization, responsible officers, the right of law petition, violation and compensation, and penalties. The Chapter of the Control of Living Modified Organisms (LMOs), which is a highlight of this Act, describes the control on importation/export/transit, utilization, confined field trial, release to the environment, and commercialization as food and feed or for processing.

#### National Biotechnology Policy Framework

The National Biotechnology Policy Committee (NBPC), which was established in 2003 and chaired by the Prime Minister, approved the National Biotechnology Policy Framework (2004-2009) in December 2003. However, the framework has lost momentum under the deadlock on biotechnology research and development. In addition, the NBPC's responsibilities will be transferred to National Science Technology and Innovation Policy Council under the National Science Technology and Innovation Act 2008, which was officially endorsed on February 13, 2008. A summary of the framework was discussed in [TH6077](#).

#### **Section V. Marketing:**

Thai producers, retailers, and consumers remain misinformed about the safety and human health and the environmental benefits of transgenic plants or foods. Anti-biotechnology groups, such as Green Peace Thailand and Organization of the Poor, strongly oppose field-testing or introduction of transgenic crops. Mass media in Thailand, including newspapers and television, usually provide largely unbalanced reporting by enlarging the negative views while minimizing the positive views

about modern biotechnology.

The latest survey conducted by THAI TOPIC in 2003 had consumers rank a series of food characteristics by order of priority. Consumers ranked “free of chemical residue” first while “non-GM” came in second to last. Although “non-GM” was lower in priority, 80 percent of consumers surveyed wanted food products containing biotech ingredients to be labeled accordingly. Much like producers, Thai consumers are highly uneducated about the safety and benefits of GM crops. A 2005 survey by the Agricultural Economics Office showed more than 90 percent of Thai consumers felt they had no access to information on the costs and benefits of biotech crops, and consequently were skeptical of any health benefits derived from biotech food products. Further impeding their ability to obtain information is the Thai media, whom often portray biotechnology negatively. Only 10 percent of journalists surveyed reported they had researched reference material on biotechnology.

In 2004, Asian Food Information Center (AFIC) conducted a survey of Perception, Understanding and Acceptance of Genetically Modified Plants and Animals in Thailand. The survey is summarized as follows:

Most of the survey respondents reported they had heard of biotechnology. Most common source of information was TV, followed by newspapers. However, the levels of understanding were low, corresponding positively with educational achievement levels. A majority of survey respondents indicated a desire for more relevant and appropriate information in order to participate in discussions and decision-making. Those with highest educational attainment were more knowledgeable about the technology and were able to articulate specific potential benefits of biotechnology and concerns that they may have about the technology. Respondents were in favor of rigorous biosafety policy and labeling of products containing biotechnology ingredients.

Overall, the sample group anticipated that development of biotechnology would have neither negative nor positive impact on Thailand. However, some respondents highlighted potential negative impact in four areas: export trade, domestic trade, consumer health, and the natural ecology of areas surrounding biotechnology crops.

Opinions on Thailand’s national preparedness for development of biotechnology were spread fairly evenly from high to low, and 1 in 3 had no opinion or were unsure.

Survey respondents expressed a demand for well presented, balanced and factual information on government policy and capacity, the technology, in-country research and development progress, and legal and policy framework regarding seed supply.

Based on these surveys, government and private sector scientists agree that biotech outreach activities educating the public should be continued. Both government and private sector stakeholders stated that successful risk communication will be an integral part in moving biotechnology forward.

The Biotechnology Alliance Association (BAA), a Thai biotechnology advocacy group, presented their Study of Agricultural Biotechnology Benefits in Thailand in early 2007. The report reviewed

the socioeconomic impact of the technology and estimates Thailand's loss if Thailand does not adopt this technology. It contains the latest information about successful adoption of biotech crops around the world, including case studies on cotton and papaya. Biotechnology offers alternatives to conventional breeding to improve plant characteristics so that productivity increases and inputs, such as fertilizers and pesticides, are decreased. The report also indicated that genetically enhanced varieties of cotton and papaya - both important crops in Thailand - were successfully grown in other countries and were available for adoption here after passing through a biosafety regulatory process. Insect pests and viral diseases have devastated most of the country's traditional production of both these crops. During the 1980s, Thailand's area planted in cotton peaked at more than 150,000 hectares and production at more than 65,000 metric tons. Recently, that area has fallen to less than 11,200 hectares. It is estimated that Thailand loses potential economic benefits of US \$3.0-7.0 million per year from not allowing GM papaya to be grown in the country (based on GM papaya's average yields of 74 tons/hectares against the current 18 tons/hectare derived from non-GM papaya varieties). See also [TH7015](#).

## **Section VI. Capacity Building and Outreach:**

In recent years, the U.S. Government (USG) has conducted several capacity building and outreach activities in Thailand in the biotechnology area. These activities were funded by USDA, State Department, and other entities. The activities in 2007-2009 include:

USDA sponsored Thai participants to the Asian Pacific Economic Cooperation (APEC) dialogue on biotechnology in Australia in January 2007 and in Peru in 2008. Under the USDA sponsorship, high-ranking officials from Ministry of Agriculture and Ministry of Public Health were invited to attend the two round table discussion on commodity trade and the low-level presence (LLP) in food of recombinant DNA plant materials in Singapore in February and July 2009.

An FAS/Washington Specialist visited Thailand during May 29 – June 1, 2008 to explore biotech outreach opportunities with relevant Thai stakeholders.

Dr. Clive James, Chairman, ISAAA, presented his update on the Global Status of Commercial Biotech/GM Crops to Thai audiences, including the biotechnology community and media.

Dr. Chris Wozniak, a senior scientist and biotechnology regulatory expert from the U.S. Environment Protection Agency (USEPA), travelled to Thailand from November 24-25, 2008 to present on human health and environmental risk assessment processes, as well as risk perception.

Dr. Dennis Gansalves, Center Director, USDA/ARS, visited Thailand in June 2009 and gave presentation on “Environmental, Food Safety Assessment and Experiences on Deregulation of Hawaiian Transgenic Papaya” to a group of Thai biotech researchers and academic community.

The Department of State and FAS/Bangkok are scheduled to organize an agricultural biotechnology risk communication workshop in Bangkok in September or October 2009 as a part of APEC workshop on risk communication. The audience is expected to include Thai government advisors involved in biotechnology regulatory issues, members of parliament, decision makers from the private sector, science writers, members of the media, and persons involved in risk communications.

Country-specific needs or strategies that would be useful in raising the capacity of Thailand to apply transparent, science-based regulations to agricultural biotechnology should reflect the following items.

Thailand is in the process of developing a National Biosafety Framework. Biosafety issues are new to many relevant government officials and scientists. As a result, short course training in the areas of risk assessment and of various policy and legal aspects should be continued for both local scientists and policy makers.

In parallel to developing effective science-based regulations like the National Biosafety Law, Thailand critically needs to develop effective risk communication strategies to support technological adoption and enable public acceptance. Without public acceptance, the biosafety law legislation will be difficult to advance and extended biotech field trials and commercialization may not be possible.

The various biotech-related agencies (including Office of Natural Resources and Environmental Policy and Planning, Department of Agriculture, BIOTEC, and Food and Drug Administration) are developing a biosafety database for Thailand and could benefit from training or capacity building in this task.